

What is claimed is:

1. An angle detection apparatus that detects an inclination angle of a detection object, comprising:

5 a light source that irradiates light onto a reflective surface for detection provided on said detection object;

an optical path splitting element that splits an optical path of reflected light that has been reflected by said reflective surface for detection ; and

a plurality of optical detectors that each receive a luminous flux split by said  
10 optical path splitting element, and each independently detect an inclination angle of said reflective surface for detection .

2. The angle detection apparatus according to claim 1, wherein each luminous flux has a different amount of movement on light receiving surfaces of said plurality of optical detectors relative to an amount of change in the inclination angle of said detection  
15 object.

3. The angle detection apparatus according to claim 1, wherein each optical path from said reflective surface for detection to light receiving surfaces of said plurality of optical detectors has a different length.

4. The angle detection apparatus according to claim 1, wherein said plurality of  
20 optical detectors each have different sensitivity characteristics in angle detection.

5. The angle detection apparatus according to claim 1, wherein said optical path splitting element comprises a beam splitter provided with an optical path splitting surface that splits said optical path into an optical path of reflected light and an optical path of transmitted light.

25 6. The angle detection apparatus according to claim 5, further comprising an

optical surface having optical power placed between said optical path splitting surface and at least one of said plurality of optical detectors.

7. The angle detection apparatus according to claim 6, wherein said optical surface is provided integrally with said at least one of said plurality of optical detectors.

5 8. The angle detection apparatus according to claim 6, wherein said optical surface is provided on each of said optical paths to said plurality of optical detectors, and each optical surface has a different optical power.

9. The angle detection apparatus according to claim 6, wherein each optical surface has positive optical power.

10 10. The angle detection apparatus according to claim 6, wherein one of said optical surfaces comprises a reflective surface having positive optical power.

11. The angle detection apparatus according to claim 10, wherein said optical path splitting surface comprises a polarization splitting surface that either transmits or reflects the light by a polarization component, and further comprises a  $1/4$  wavelength plate  
15 placed between said polarization splitting surface and said reflective surface having positive optical power.

12. The angle detection apparatus according to claim 1, wherein said optical path splitting element comprises a flat plate.

13. The angle detection apparatus according to claim 1, wherein said optical path  
20 splitting element comprises a polarization beam splitter.

14. The angle detection apparatus according to claim 13, wherein said optical path splitting element comprises a nitrate material in which  $n_d > 1.7$  wherein  $n_d$  is an index of refraction.

15. The angle detection apparatus according to claim 1, wherein one of said  
25 plurality of optical detectors comprises a four section light receiver provided with a light

receiving surface divided into four sections.

16. The angle detection apparatus according to claim 1, wherein one of said plurality of optical detectors comprises a two-dimensional position detection light receiver.

5 17. The angle detection apparatus according to claim 1, wherein said plurality of optical detectors include a four section light receiver provided with a light receiving surface divided into four sections and a two-dimensional position detection light receiver.

18. An optical signal switch system that switches an optical path of optical signals transmitted from one optical transmission path to another optical transmission path from  
10 among a plurality of optical transmission paths, comprising:

a light deflection element that switches optical paths of the optical signals;

a reflective surface for detection for detecting a deflection angle of the light deflection element that is provided integrally with the light deflection element;

the angle detection apparatus according to claim 1 that detects the deflection  
15 angle using the light deflection element as a detection object; and

a deflection angle control unit that controls a deflection angle of said light deflection element using a deflection angle detected by said angle detection apparatus.

19. An information recording and reproduction system that performs either recording or reproduction or both the recording and reproduction of information signals  
20 on a recording medium provided with a recording surface that enables either the recording or reproduction of information signals or both the recording and reproduction of information signals to be performed by light irradiation, comprising:

a light source that emits luminous flux;

an optical system that forms an image of said luminous flux on said recording  
25 surface of said recording medium;

a light deflection element that is located within the optical system and that deflects said luminous flux onto said recording surface within a parallel surface, and has a reflective surface for detection whose inclination angle changes in synchronization with a deflection angle; and

- 5 the angle detection apparatus according to claim 1 that detects the inclination angle using the light deflection element as a detection object.